WO 2004/057349

10/540333

PCT/KR2003/002788

Rec'd PCT/PTO 20 JUN 2005

SYSTEM AND METHOD FOR MEASURING RADIATION CHARACTERISTIC OF ANTENNA

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This application is a 371 of PCT/KR03/02788 filed on 12/19/2003.

BACKGROUND OF THE INVENTION

(a) Field of the Invention

The present invention relates to a system and a method for measuring the radiation characteristic of an antenna, and more particularly, to an antenna measurement system and an antenna measurement method which speedily measure the radiation characteristic of a source antenna using micro-scaled test antennas and IC chips.

(b) Description of the Related Art

Generally, among the antenna ranges which are used to measure the radiation characteristic (the phase, or the intensity or amplitude) of the antenna, are there a far-field range where the measurement is made while the source antenna is placed far from the tester or receiver antenna, a near-field range where the measurement is made by using the source antenna as a transmitter and taking samples near to source antenna with a probe per a predetermined distance, and a compact range where the measurement is made while the source antenna is placed near to a reflector antenna being the tester antenna.

The far-field range is further classified into an elevated range where the measurement is made while the source antenna and the tester antenna are installed at a tower, a building or the top of a hill, a slant range where the measurement is made while one of the source and the tester antennas is placed at high position and the other on the ground, and an anechoic chamber where the measurement is made in a room having a wall with absorbents for removing the possible reflection. The elevated range and the slant range involve lower cost for the installation and measurement of the relevant elements, but practically require very wide area and high tower, with the disadvantage of being much influenced by the external weather. The anechoic chamber involves the indoor measurement, and is not influenced by the external weather, with the disadvantage in that much cost is needed to make a large laboratory (for example, making it with a vertical length of 10m, a horizontal length of 10m and a height of 5m) with absorbents.

The far-field distance r_{ff} between the source antenna and the tester antenna is given by $r_{ff}=2D^2/\lambda$ (where D indicates the inter-distance of the source antenna, and λ indicates the operation frequency). As illustrated with the 70m reflector antenna